

fact, already noted, that melanism often masks potential patterns until these are disclosed by some disruptive biological process resulting in a striking discontinuous variation. (c.f. Harrison, J. M., 1953, Effects of Hybridisation).

Indeed just such an instance in a common mammal was recorded by David L. Harrison (1962). The case described occurred in a dog Fox *Vulpes vulpes crucigera* Bechstein which was killed on 13th December, 1961, near Brasted in Kent. This individual exhibited symmetrical albinism of both hind extremities, a similar white pattern of the hind feet occurs frequently in the *V. v. pusilla* Blyth with a range in N. W. India, Baluchistan and Persia to Iraq.

Summary:

A case of symmetrical albinism in a Skylark is described, and is discussed in the light of some recent research into albinism and allied problems in birds. It is suggested that symmetrical albinism, etc. of the wing-tips be referred to as acro-albinism, etc.

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The taxonomic affinities of the New Guinea genera *Paramythia* and *Oreocharis*

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SUMMARY

Paramythia and *Oreocharis* are currently regarded as aberrant genera of Dicaeidae. They have been compared only with the Sturnidae and Sylviidae. *Paramythia* resembles a bulbul, Pycnonotidae, and the two genera were therefore compared with those of the latter family and the Dicaeidae. Filoplumes, rictal bristles, tarsal scutes and nostril shape, were found to be shared characters which did not indicate relationship. The general appearance, plumage pattern and colour, bill shape, tongue, stomach, and

type of nest, appeared to indicate a link with the Pycnonotidae. The only apparent link with the Dicaeidae lay in the vestigial tenth primary of *Paramythia*, *Oreocharis*, and most species of *Dicaeum*. Studies on other groups have shown that this may be an adaptive feature and not an indication of relationship. On the present evidence it is considered better to regard *Paramythia* and *Oreocharis* as genera of the family Pycnonotidae.

INTRODUCTION

When examining skins of the monotypic New Guinea species, *Paramythia montium*, S. A. Parker noticed the strong resemblance of this species to the bulbuls, Pycnonotidae and subsequently initiated this study. The species had been assigned to the flowerpeckers, Dicaeidae, by Mayr (1933) who had compared its characters with those of other families with which a relationship had been suggested, namely the Sturnidae and Sylviidae, but not with other taxa outside New Guinea. One species of Pycnonotidae, *Hypsipetes affinis*, occurs in the Moluccas, but otherwise the bulbuls come no nearer than Indonesia, Borneo, and the Philippines.

There are four aberrant genera in New Guinea, *Paramythia*, *Oreocharis*, *Rhamphocharis*, and *Melanocharis*, which are usually placed with the Dicaeidae, and in the present paper the hypothesis of a possible relationship of the first two of these to the Pycnonotidae is examined. These two monotypic genera contain the related species *Paramythia montium* and *Oreocharis arfaki*. Any conclusions concerning these two may affect the ultimate placing of *Pardalotus*, and there are some doubts concerning *Rhamphocharis* and *Melanocharis*. For the purposes of comparison in this paper it has therefore been necessary to limit the Dicaeidae to the typical genera of *Prionochilus* and *Dicaeum*; and in this context the term "Dicaeidae" will refer only to these two.

1. GENERAL APPEARANCE.

The Pycnonotidae are small to medium-sized birds, with rather long, soft fluffy plumage; and the sexes usually alike. The tail is long to medium; forked, square-tipped, or graduated. The Dicaeidae are very small birds with not unduly long or soft plumage, sexes alike or different and the tail short.

Both *Paramythia* and *Oreocharis* have soft downy plumage, a fact remarked on by Mayr (1933). *Paramythia* is medium-sized with a long graduated tail. *Oreocharis* is small, with a shorter tail, longer than the largest Dicaeidae species, and nearer the size of *Pycnonotus squamatus*, with a tail-length comparable with the latter. The sexes are similar in *Paramythia*, dissimilar in *Oreocharis*.

2. FILOPLUMES

The grouping of these two genera with the Dicaeidae was influenced by the presence in all of them of filoplumes. Since filoplumes are also present in the Pycnonotidae this is not necessarily diagnostic. The presence of numerous long wiry black filoplumes on the flanks in both *Paramythia* and *Oreocharis* is a peculiarity that links the two but does not provide a clue to their relationship with other genera.

3. PLUMAGE PATTERN AND COLOUR

(a) *Paramythia*. The sexes are alike. The birds are green on mantle, wings and rump; dull blue on the under side, around the neck and upper mantle,

and on the tail; while the under tail-coverts and edges of the flanks are chrome yellow. There is a glossy blue-black shield on the throat and upper breast, and the same colour extends to the lores and forehead. The nape, hind-crown, and a stripe over the eye are white, forming a crescent on the posterior part of the head which is partly concealed by a broad crest of elongated blue-black feathers with rounded ends, arising on the crown in the region between the orbits and overlaying the short white nape feathers. In the young bird the green tint extends onto the neck and nape, the white being much reduced; and there is a green tint on the breast, the blue-black being confined to an ill-defined area of the throat.

There are two species of Pycnonotidae with similar general colouring. *Pycnonotus cyaniventris* is green on mantle, wings, rump and tail, and is grey on the under side, neck and head, with yellow under tail-coverts. *P. atriceps* is green on the mantle, yellowish-green on wings, rump and tail; grey on the neck and under side; yellow on the under tail-coverts and edges of the flanks; and the head and neck are glossy purplish-black. In head-colouring *Paramythia* resembles *P. sinensis* which has a similar crescentic white area from the eye back across the nape, partially hidden by the longer dark feathers of the crown. Short feathering on the nape and a crest formed by elongated feathers arising in the region between the orbits is typical of the Pycnonotidae. *P. melanicterus*, a yellow and green bulbul with a glossy blue-black head, has a crest of elongated feathers with rounded tips which is precisely similar to that of *Paramythia*.

(b) *Oreocharis*.—Plumage relationships are less obvious in this species. The female is green dorsally, with a blue tail. There are a few vestigial yellow tips to tertials and inner secondaries. The sides of the head, throat and upper breast are grey, and there are pale tips to the ear-covert feathers. There is a zone of yellow bordering the grey breast shield and extending along the flanks to the yellow under tail-coverts, the belly being white. The yellow and white feathers have dark crescentic patterns which might be evidence of a relict pattern preceding the uniform colouring of any of these taxa (Harrison 1963a, 1963b). The bulbul *P. tephrolaemus kikuyuensis* is green dorsally and greenish-yellow ventrally with the entire head grey and a grey breast shield. It has a generalised resemblance to the female of *Oreocharis*, which is increased by such points as the pale throat and small pale markings on the ear-covert feathers. The small species *P. squamatus* has patterned feathers on the breast and flanks; and on the hind-flanks, where the earlier forms of markings tend to persist, there are black crescentic markings on pale feathers, comparable to the pattern found on *Oreocharis*; but on the breast these become black centres to pale-edged feathers.

The male of *Oreocharis* bears a strong superficial resemblance to *Parus major* (Paridae). As in the female the mantle, wings and rump are green and the tail blue. There are conspicuous yellow tips on the outer webs of the inner secondaries and tertials. The head is mainly glossy black, and this extends on a small shield on the upper breast, and dorsally ceases at the mid-crown. The ear-coverts form a bright yellow patch, and the under side is yellow, with an irregular stain of chestnut-red on mid-breast and belly. The only bulbul with a similar pattern is *P. leucogenys*, which is mainly brown and white with yellow under tail-coverts, but with a black head and breast shield and with ear-coverts forming a white patch. The

light tips to some of the remiges occur also in *Ixonotus guttatus*, which has marked pale tips to inner secondaries and tertiaries, and also on rump and wing-coverts, but is otherwise drab above and white below.

(c) Comments. From the above descriptions it is clear that, in spite of their apparent differences, the details of colour and pattern in the plumage of both *Paramythia* and *Oreocharis* are paralleled by similar components in the plumages of species of Pycnonotidae. There appear to be no similar parallels in the plumages of species of Dicaeidae.

4. TARSAL SCUTES

The Dicaeidae have smooth tarsi without obvious evidence of scutes. Many species of Pycnonotidae have smooth tarsi, but some, e.g. *P. sinensis* and *P. tephrolaemus*, have a row of very faintly defined scutes on the anterior surface of the tarsus. The smooth tarsal condition of *Paramythia* and *Oreocharis* could be equally related to either family.

5. RICTAL BRISTLES.

Large rictal bristles are present in many species of Pycnonotidae but they may vary considerably. Those of *P. cyaniventris* are few and fine, and those of *P. squamatus* are very reduced in size and number, and in neither species are they very apparent. Groups of fine rictal bristles are also present in the Dicaeidae. *Paramythia* shows a few short fine rictal bristles that are not easy to detect, and *Oreocharis* appears to have none.

6. BILL SHAPE

The bill of *Paramythia* tapers evenly towards the tip, with a slightly curved culmen. It is broad at the nostrils but laterally compressed towards the tip. The tip of the upper mandible projects slightly and there is a small tomial notch posterior to it. The bills of species of Pycnonotidae such as *P. sinensis*, *P. atriceps* and *Ixonotus guttatus* closely resemble that of *Paramythia* in shape and have a similar notch posterior to the slightly projecting tip of the upper mandible. The bill of *Oreocharis* is shorter and stouter, without an overhanging tip and with a poorly defined notch. It is more similar to the bills of *P. finlaysoni* and *P. melanipectus*. The bills of the Dicaeidae vary from relatively short, blunt and laterally flattened to narrow and decurved structures. They are not notched at the tip, and there appear to be no obvious correlations with those of *Paramythia* and *Oreocharis*.

7. NOSTRIL

In the Dicaeidae the nostril is partially covered by an operculum, leaving a transverse slit-like aperture at the lower edge, partially concealed by the operculum. In most of the Pycnonotidae the nostril is also partially covered by an operculum, leaving a transverse narrow aperture at the lower edge, which is usually slightly broader than that of the Dicaeidae and not concealed by the flange-like operculum edge, although in some cases no aperture is visible. Both *Paramythia* and *Oreocharis* have nostrils partially covered by an operculum to leave a narrow transverse opening at the lower edge, the appearance being closer to that of the Pycnonotidae than to the Dicaeidae.

8. TENTH PRIMARY

In the Pycnonotidae the tenth primary varies in length from one half to one third of the length of the longest primary. In the Dicaeidae the

tenth primary in species of *Prionochilus* varies from one third to one quarter the length of the longest primary, while in *Dicaeum* it is usually vestigial. In both *Paramythia* and *Oreocharis* it is vestigial.

9. TONGUE

The tongues of the Dicaeidae are tubular with complex brush tips. The tongues of *Pycnonotus* species examined, *P. barbatus* and *P. luteolus*, were found to be relatively broad and tapering, narrowing to a tiny double tip formed by a slit-like median notch. The dorsal surface was smooth and the ventral surface had a slight groove towards the end, leading to the notch. The tongue of *Paramythia*, described and figured by Mayr and Amadon (1947), is also relatively broad and tapering with a small notch at the tip very similar to that found in the Pycnonotidae. The tongue of *Oreocharis* is unknown.

10. STOMACH

The gizzard of the Dicaeidae consists of a blind diverticulum leading off the proventricular-intestinal junction, and can be closed by a sphincter (Desselberger 1931). The gizzard of *Paramythia* is a typical ridged structure with two muscular pads (Mayr and Amadon 1947). The gizzard of *Pycnonotus barbatus* was examined and showed a similar ridged gizzard with two muscular pads.

11. NEST

The nests of the Pycnonotidae are open cup-shaped structures. Those of the Dicaeidae are pendent, bag-shaped nests of woven and felted material, the top being partly covered and leaving an entrance to one side of the top of the nest. *Paramythia* makes a cup-shaped nest in the twigs of a thick bush (Rand 1942). Parker examined a nest at the American Museum of Natural History which had been collected at Mount Hagen for Dr. E. T. Gilliard (AMNH. 17284) and was presumed to be that of *Oreocharis*. It was a deep cup nest made mainly of moss and lined with hair, and had been built in a fork.

DISCUSSION

The evidence for relating *Paramythia* and *Oreocharis* to either the Pycnonotidae or the Dicaeidae may be summarised as follows. The information on filoplumes, tarsal scutes and rictal bristles shows them to be indeterminate as indications of relationship, while nostril shape is indeterminate but with a slight suggestion of relationship with the Pycnonotidae. The general appearance, plumage pattern and colour, bill shape, type of nest, and in *Paramythia* tongue and stomach, all suggest that the two species may be directly linked with the Pycnonotidae. The specialised flank filoplumes link the two species without revealing further relationships.

The only character that can be clearly set against these is the vestigial tenth primary present in both species and also in the genus *Dicaeum*, but not in the Pycnonotidae. In view of this it is necessary to consider the implications of the reduction of this feather. It has been shown (Kipp 1942, 1955; Dorst 1962; Meinertzhagen 1951; Stegman 1962) that a long tenth primary is associated with a relatively short rounded wing, and a short or vestigial tenth primary with a longer and narrower wing, the former wing shape being characteristic of sedentary birds and the latter of species needing sustained or long-distance flight. Stegman (1962) had

also shown that the long narrow wing usually evolved from a shorter rounded wing with the accompanying reduction in size of the tenth primary.

A study of the warblers of the genus *Acrocephalus* (Parker and Harrison 1963) revealed that a shorter tenth primary and longer wing was characteristic of migratory species. It was also found that a short tenth primary combined with a shorter, more rounded wing occurred in species of *Acrocephalus* on Pacific islands and it was concluded that these populations had been derived from invasions by longer-winged ancestral forms which under sedentary conditions had re-evolved a more rounded wing, but that the short tenth primary remained unchanged. A similar trend was found in larks of the genus *Alauda* (Harrison, in press). It could therefore be argued that while the relatively sedentary Pycnonotidae species showed the typical rounded wing and longer tenth primary, the presence of a vestigial tenth primary in New Guinea forms might indicate that they had been derived from an earlier invading long-winged form no longer extant, and that the loss of the tenth primary resulted from this phase. This would not invalidate other evidence of relationship nor necessarily imply considerable divergence. In the case of *Acrocephalus* all three wing-types occur in one genus. The vestigial tenth primary in *Dicaeum* might indicate a similar earlier phase or alternatively might be associated with a need for specialised or prolonged flight in these species.

In view of the evidence now available, and in spite of the incompleteness of the available information regarding *Paramythia* and *Oreocharis*, it is very difficult to uphold the suggested relationship between these species and the Dicaeidae, or to deny the apparent affinities with the Pycnonotidae. Some of the resemblances to the latter family might be accidental, due to the presence of generalised rather than specialised conditions in both taxa. The relatively simple tongue structure might be such an example. Even when this is taken into account it would be more satisfactory, on present evidence, to remove the two genera *Paramythia* and *Oreocharis* from the Dicaeidae, and to regard them as a part of the Pycnonotidae. They appear to constitute a specialised isolate group, having certain characters suggesting that they are more closely related to one another than to the other genera of Pycnonotidae.

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